

AMENDMENTS

In the Title:

Please replace the title of the invention with the following new title:

A COMPUTER-READABLE MEDIUM FOR DECODING NON-BIOLOGICAL
MICROARRAY INFORMATION

In the Specification:

Please replace the paragraph beginning on page 20, line 13, with the following rewritten paragraph:

Chemical modification methods for labeling a nucleic acid sample usually include incorporation of a reactive nucleotide into a nucleic acid, e.g., an amine-allyl nucleotide derivative such as 5-(3-aminoallyl)-2'-deoxyuridine 5'-triphosphate, using an RNA-dependent or DNA-dependent DNA or RNA polymerase, e.g., reverse transcriptase or T7 RNA polymerase, followed by chemical conjugation of the reactive nucleotide to a label, e.g. a N-hydroxysuccinimide of a label such as **Cy-3 CY3™** or **Cy5 CY5™** to make a labeled nucleic acids. Such chemical conjugation methods may be combined with RNA amplification methods, to produce labeled DNA or RNA.

Please replace the paragraph beginning on page 21, line 26, with the following rewritten paragraph:

In certain embodiments, the labels used in the subject methods are distinguishable, meaning that the labels can be independently detected and measured, even when the labels are mixed. In other words, the amounts of label present (e.g., the amount of fluorescence) for each of the labels are separately determinable, even when the labels are co-located (e.g., in the same tube or in the same duplex molecule or in the same feature of an array). Suitable distinguishable fluorescent label pairs useful in the subject methods include **Cy-3 CY3™** and **Cy-5 CY5™** (Amersham Inc., Piscataway, NJ), **Quasar QUASAR™** 570 and **Quasar QUASAR™** 670 (Biosearch Technology, Novato CA), **Alexafluor555 ALEXAFLUOR555** and **Alexafluor647 ALEXAFLUOR647** (Molecular Probes, Eugene, OR), **BODIPY™** V-1002 and **BODIPY™** V1005 (Molecular Probes, Eugene, OR), **POPO-3™** and **TOTO-3™** (Molecular Probes, Eugene, OR), and **POPPO3™** and **TOPPO3™** (Molecular Probes, Eugene, OR). Further suitable distinguishable detectable labels may be found in Kricka et al. (Ann Clin Biochem. 39:114-29, 2002).

Please replace the paragraph beginning on page 37, line 9, with the following rewritten paragraph:

A system of targets, probes and labeling techniques may be used to encode non-biological information into a microarray, using, for example, binary labeling techniques. The binary code may be represented by the presence or a single label (i.e., a radioactive or non-radioactive label), or by the presence of one or two distinct distinguishable labels (e.g., generated ~~Cy-3~~ CY3 TM or ~~Cy-5~~ CY5 TM). By extension, the system may be used to encode an alphabet of greater than 2 symbols where the normalized intensity of a color may represent unique, distinguishable symbols (i.e., 10 intensity levels could represent digits 0-9, twenty six intensity levels could represent the letters A-Z, etc.). Positive and negative control probes can also be laid out on the microarray to display a symbol that can be human readable, such as number, letter, graphic icon, etc. Fig. 2 shows an image of a single array of a multi-array substrate, hybridized with a labeled probe. The hybridization pattern provides non-biological information about the array. For example, in each corner of this array, signals from a set of four probes form a specific pattern that indicates the four corners of the array (i.e., a signal from the top left hand probe of the quartet of probes indicates the top left hand corner of the array; signals from the top left and top right hand probes of the quartet indicate the top right hand corner of the array; signals from all but the top right hand probes of the quartet indicate the bottom left corner of the array, and signals from all four probes indicate the bottom right corner of the array. Also shown in this figure is a subarray number, i.e., a designation that distinguishes one array of a multi-array substrate from other arrays of the same substrate. Typically these arrays are labeled 1-8. In the embodiment shown in Fig. 2, the array is designated with by the numeral "1", written in dot matrix, beneath the top left hand corner of the array.